

REMARKS

Claim 1:

Claim 1 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Cook (U.S. Patent No. 5,879,241) in view of Teder (U.S. Patent No. 5,700,204) (see item 3 of Office Action). Applicant respectfully disagrees.

The Examiner argues that Cook discloses a method of designing a customized golf club (column 2, lines 1-34), determining a tempo function relating tempo to club length for a particular golfer (Figures 1 and 3, column 3, lines 33-37 and column 4, lines 49-64), a perceived force function using the weight of the head of the club as well as the length of the club (column 7, lines 30-67 and column 8, lines 1-58), using parameters including target distance for the club (Tables 1 and 2), club length and shaft flexibility (column 3, lines 50-58), and using this data to calculate optimum values for the selected design parameter (column 11, lines 30-67).

First, Applicant notes that column 3, lines 33-37 and column 4, lines 49-64 do not teach a method that includes a step of “determining a *tempo function* relating *tempo* to club length for a particular golfer” as the Examiner suggests. The cited passages describe a step in the Cook method that involves a golfer selecting a preferred *frequency* for his golf clubs. This is achieved by swinging test clubs that have different frequencies and selecting the club that “felt best and produced the best results” (see column 5, lines 1-2). Once a preferred frequency has been selected all clubs in the set are prepared with this frequency (e.g., see column 3, lines 53-54). Thus Cook’s method involves selecting a preferred frequency and using that frequency for each club in the set. Cook’s *frequency* and Applicant’s *tempo* are not the same variables. The frequency of a golf club has a fixed value that is specific to each golf club and independent of the golfer (e.g., see the method for measuring frequency that is described on column 4, lines 1-23). In contrast, tempo is a measure of how fast the golfer strikes the ball with a given club and therefore depends on the *golfer*. For these reasons Cook does not teach the first step of claim 1.

Second, Applicant notes that column 7, lines 30-67 and column 8, lines 1-58 do not teach a method that includes a step of “determining a *perceived force function* relating *perceived force* to club length and club head mass for the golfer” as recited in the second step of claim 1. The cited passages describe a step in the Cook method that involves determining the center of gravity for each club in the matched set. This is achieved using a formula (shown in various forms in Equations 3-5 on columns 7-8) that relates the force (F) that is required to move each club about

an axis of rotation to various club parameters. As shown in Figure 3, the axis of rotation is located a distance d_2 above the end of the butt of each club and the force (F) is applied *perpendicularly* to the club shaft at the center of gravity. In contrast, the second step of claim 1 involves a different force, namely the force that is *perceived* by the golfer at impact. As discussed on page 6 of the application, in certain embodiments, the perceived force is the centripetal force that is applied *along the shaft* at impact. This perceived force depends in part on the length of the club and the weight of the club head but it also depends on the golfer and the speed with which he swings the golf club. This is captured by the standard formula that relates centripetal force to each of these parameters (see Equation 5 on page 8 of the application). In contrast, as shown in Figure 3 (and Equations 3-5), the force (F) in Cook is independent of the golfer and depends solely on the club. For these reasons Cook does not teach the second step of claim 1.

The fourth step of claim 1 relies on the first and second steps. Since Cook fails to teach at least the first and second steps it cannot teach the fourth step.

The deficiencies of Cook described above are not remedied by the secondary Teder reference. Indeed, in rejecting claim 1, the Examiner relies on Teder solely to teach “the calculation of a preferred trajectory”. Since at least the first, second and fourth steps of claim 1 are not even taught or suggested by Cook (as discussed above), whether Teder teaches trajectory calculation is irrelevant. Besides, Applicant respectfully notes that claim 1 includes a step of *selecting* a preferred trajectory for a golf ball, not *calculating* a preferred trajectory. As noted by the Examiner, Teder teaches the latter by describing a device for *measuring* ball trajectory (e.g., see Abstract). Teder does not teach a method that includes a step of *selecting* a preferred trajectory. Since Cook (and/or Teder) do not teach the limitations of claim 1 they cannot anticipate claim 1. MPEP § 2131.

For all of these reasons, Applicant submits that Cook (alone or in combination with Teder) does not teach the method of claim 1. Withdrawal of this rejection is respectfully requested.

Claims 2-4, 6-18, 21 and 22:

Applicant acknowledges the Examiner's finding that claims 2-4, 6-18, 21 and 22 would be allowable if re-written in independent form including all of the limitations of base claim 1 and any intervening claims (see item 5 of Office Action). As discussed in the preceding section, Applicant respectfully submits that base claim 1 is allowable. For this reason, Applicant has not re-written claims 2-4, 6-18, 21 and 22 in independent form.

Claims 5, 19 and 20:

Applicant acknowledges the Examiner's finding that claims 5, 19 and 20 are allowable (see item 5 of Office Action).

Claims 23 and 24:

Claims 23 and 24 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Benoit (U.S. Patent No. 4,674,324) in view of Herber (U.S. Patent No. 5,865,684) (see item 4 of Office Action). Applicant respectfully disagrees.

Claim 23 involves a method for determining the perceived center of gyration *for a particular golfer*. The claimed method includes three steps. In a first step the golfer swings a test club to determine its perceived length. In a second step the same golfer swings a comparison club one or more times while weight is added at a selected point along the shaft. The golfer swings the comparison club until a weight is found for which the perceived lengths of the test and comparison clubs are indistinguishable. (Note that the golfer may swing the test and comparison clubs in any order and as many times as he or she wishes). The weight added in the second step is then used in a third step to determine the center point around which the test club and weighted comparison club have identical radii of gyration. This center point is the perceived center of gyration *for that particular golfer*.

In rejecting claim 23 over Benoit, the Examiner refers to column 2, lines 25-46 and to Figures 1-8 stating simply that Benoit "discloses the determination of the center of gyration of *a golf club*" (*emphasis added*). Applicant does not understand this rejection. As noted, claim 23 is drawn to a method of determining *a golfer's* center of gyration, not to a method of determining the center of gyration of *a golf club*. Further, claim 23 includes specific steps that involve a golfer, a test club, a comparison club, weights added to the comparison club and calculations to

determine the golfer's center of gyration. The Examiner has failed to show how Benoit (alone or in combination with Herber) teaches methods that achieve the same result and/or include *any* of these individual steps. Since Benoit (and/or Herber) do not teach the limitations of claim 23 they cannot anticipate claim 23. MPEP § 2131.

Applicant can only speculate that the Examiner is taking the position that the "pivot point" in Benoit (see column 2, lines 29-31) is equivalent to Applicant's center of gyration. However, even if this were true, Applicant respectfully notes that the pivot point is not determined according to the method of claim 23. The pivot point is defined as the "point about which the club rotates as the golfer swings the club and the club 'uncocks' during the swing" (see column 7, lines 26-30). In one embodiment Benoit assumes that this pivot point is the *same* for all golfers (see column 3, lines 39-43):

The pivot point is *chosen* to be approximately five inches from the grip end of the club 36, since most golfers tend to grip their golf clubs so as to cause the clubs to pivot about a point approximately five inches from the grip end. (*emphasis added*).

Clearly this embodiment does not involve determining a golfer's *personal* pivot point, let alone *any* of the steps of claim 23. In another embodiment Benoit adjusts the pivot point based on where the golfer *grips* the club (see column 3, lines 43-47):

For an individual golfer who grips the club at some other point (e.g., 5.5 inches from the grip end), the balancing method of the present invention can be modified to balance a golf club about the actual pivot point of that golfer.

Again Benoit does not determine the golfer's true pivot point, instead an arbitrary point is picked as the pivot point (i.e., the location of the golfer's grip on the shaft). In contrast, Applicant has recognized that each golfer will have a personal center of gyration that depends on his anatomy and swing characteristics. The claimed method is an empirical method for actually determining this center by using a test club and a weighted comparison club. Benoit does not teach or suggest any method for determining this center let alone the claimed method.

Herber is cited as a secondary reference that teaches the use of a "test golf club". However, the Examiner fails to explain how this ties in with the teachings of Benoit to produce

the claimed method. Applicant can see no logical combination that yields the claimed invention. Clarification or withdrawal is therefore requested.

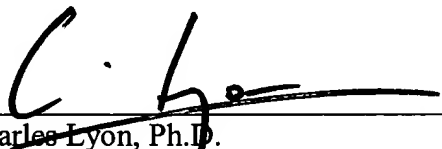
Claim 24 is a method claim that relates to the construction of a matched set of golf clubs for a golfer. The claimed method includes two steps. In a first step a perceived center of gyration is determined for the golfer according to the method of claim 23. In a second step a plurality of clubs are constructed for that particular golfer wherein the clubs have reduced variation in radius of gyration with respect to the determined center point. As discussed above, Benoit and/or Herber do not teach the method of claim 23. Accordingly they cannot teach the method of claim 24 since it depends from claim 23.

For all of these reasons, Applicant submits that Benoit (alone or in combination with Heber) does not teach the methods of claims 23 and 24. Withdrawal of these rejections is respectfully requested.

Conclusion:

Based on the arguments presented above, it is submitted that the pending claims are allowable over the art of record. Applicant would like to thank the Examiner for his thoughtful comments and careful consideration of the case. If a telephone conversation would help expedite prosecution of this case the Examiner is invited to contact the undersigned at 617-248-4793. Please charge any fees that may be required, or credit any overpayment, to our Deposit Account No. 03-1721.

Respectfully submitted,



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Agent for Applicant
Limited Recognition Under 37 C.F.R. § 10.9(b)

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